

UNREGULATED DC-DC CONVERTER HAVING SYNCHRONOUS RECTIFICATION WITH EFFICIENT GATE DRIVES

ABSTRACT

5 An unregulated DC-to-DC power converter suitable for intermediate bus voltage
converter applications includes synchronous rectifiers that are driven efficiently to
provide faster transition time and reduced loss. The DC-to-DC power converter
comprises a transformer having a primary winding and at least first and second
secondary windings. An input circuit is coupled to the primary winding and is adapted to
10 apply an alternating polarity square wave voltage to the primary winding. An output
circuit comprising an output filter is coupled to a tap of the first secondary winding. The
output filter provides a DC output voltage. A first synchronous rectifier is coupled to a
first end of the first secondary winding and a second synchronous rectifier is coupled to
a second end of the first secondary winding. The second secondary winding has a first
15 end coupled to a control terminal of the first synchronous rectifier and a second end
coupled to a control terminal of the second synchronous rectifier. A first snubber circuit
is coupled between the control terminal of the first synchronous rectifier and the second
end of the first secondary winding. A second snubber circuit is coupled between the
control terminal of the second synchronous rectifier and the first end of the first
20 secondary winding. The first and second snubber circuits provide faster transition of the
first and second synchronous rectifiers, respectively, between on and off states.